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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,598	03/29/2004	Toshio Masuda	520.39649CX3	9708
20457 7590 09/06/2007 ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873			EXAMINER KACKAR, RAM N	
			ART UNIT 1763	PAPER NUMBER
			MAIL DATE 09/06/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/810,598	MASUDA ET AL.	
	Examiner	Art Unit	
	Ram N. Kackar	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-26, 29-31, 33, 36 and 37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-26, 29-31, 33, 36 and 37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/24/07</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/24/2007 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 24-26, 29-31, 33 and 36-37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In this instance “plate acquires a voltage for generating the plasma” in claim 24 and “wherein an electric power for generating the plasma is applied to the upper plate via the disk formed member” in claim 30 are new matter.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 24-26, 29-31, 33 and 36-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase “and almost in contact with the back surface of the through hole” in claims 24 is indefinite. This term is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the claim. (Response to applicants remarks regarding this issue are discussed below)

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 24-26, 29-31, 33 and 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimbergen et al (US 6390019) in view of Moslehi (US 5846883) and further in view of Wickramanayaka (US 6333601).**

Grimbergen et al disclose a process chamber (Fig 1-35) and disclose optical transmitter (135) with through holes to allow light for the sensor (Fig 1-160 or Fig 2-25) to pass through holes (145), which allow the light to reach the sensor and reduce the possibility of deposition on the phase of the optical transmitter (Col 8 lines 35-43). Grimbergen et al teach that the aspect ratio of through holes depends upon particular process (Col 10 line 65- Col 11 line 2) and could be 12 (Col 10 lines 1-9). Further in (Fig 3a) Grimbergen et al teach optical transmitter arranged in the ceiling and teach that the plate in the ceiling (55) could be an electrode (Col 7 lines 44-50). Thus Grimbergen et al teach plasma chambers of different configuration where optical transmitter could be attached to ceiling through electrode as in Fig 3a and through shower head plate as in Fig 2 and still another arrangement as in Fig 6 showing that the placement of optical transmitter is possible in any mode of plasma generation.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to have through holes in front of optical transmitter in order to have a longer use before cleaning or replacement by reducing the possibility of unwanted deposition.

Grimbergen et al do not disclose the optical transmitter detachable to the outside of the vacuum vessel.

Moslehi discloses an optical transmitter of a longitudinal shape which could be detached from outside conveniently.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to have the configuration of the optical transmitter as in Moslehi for convenient installation.

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The recitation “electric power applied to the plate” in view of the specification does not point to any positive structure feature since high frequency power is connected to electrode and the plate acquires voltage on account of its proximity and presence of plasma. This however is a functional limitation.

Grimbergen et al in view of Moslehi disclose electrode and at least a plate underneath but do not disclose this gas distribution plate made of silicon or carbon.

Regarding claims 26, 29, 36 and 37, top plates in plasma systems are usually made of silicon or carbon as taught by Wickramanayaka that Silicon or carbon is used in dry etching apparatus as top plate below electrode as gas inlet plate (Col 1 lines 55-58).

Further since silicon gas distribution plate is disposed under aluminum electrode and exposed to plasma as in the invention it will inherently have bias developed. As discussed above, this is only a functional limitation and no positive structure is implied by it.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to have the lower plate also the gas inlet plate (below a conductive metal plate) made of silicon or carbons for dry etching applications.

Response to Amendment

Applicant's arguments filed 4/24/2007 have been fully considered but they are not persuasive.

Applicant's arguments in response to the issue of “and almost in contact with the back surface of the through hole” are not persuasive. Applicant's reliance on Fig 9 is misplaced since

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Fig 9 is directed to a different embodiment neither claimed nor examined before. Rather Fig 2, Fig 7 and Fig 8 show this mounting clearly. Further, Fig 9 discloses clear spacing between the optical transmitter end and the through holes to allow gas to flow to the hole in front of the transmitter to keep this end purged. In the claimed invention there is no space between plates 115 and 111 and the edge of optical transmitter 141 abuts the plate 115 behind holes 115b (Fig 2, Fig 7 and Fig 8). The issue of abnormal discharge is related to through-hole diameter since plasma can enter a large diameter size hole but not a small diameter size hole. Therefore small hole prevents abnormal discharge from occurring. Applicants have suggested several advantages of the claimed invention, which are not clear, do not have proper support in the specification and are not commensurate to the scope of the claims.

For example, the diameter of the optical transmitter is submitted as smaller than the diameter of the through-hole (page 12 lines 9 and 10 from top).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ram Kackar

Primary Examiner AU 1763